



Projecting the impact of climate change on dengue transmission in Dhaka, Bangladesh

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Abstract:

Weather variables, mainly temperature and humidity influence vectors, viruses, human biology, ecology and consequently the intensity and distribution of the vector-borne diseases. There is evidence that warmer temperature due to climate change will influence the dengue transmission. However, long term scenario-based projections are yet to be developed. Here, we assessed the impact of weather variability on dengue transmission in a megacity of Dhaka, Bangladesh and projected the future dengue risk attributable to climate change. Our results show that weather variables particularly temperature and humidity were positively associated with dengue transmission. The effects of weather variables were observed at a lag of four months. We projected that assuming a temperature increase of 3.3 degrees C without any adaptation measure and changes in socio-economic condition, there will be a projected increase of 16,030 dengue cases in Dhaka by the end of this century. This information might be helpful for the public health authorities to prepare for the likely increase of dengue due to climate change. The modelling framework used in this study may be applicable to dengue projection in other cities.

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Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Other Climate Scenario

Other Climate Scenario: IPCC projections- 1,2,3.3 degree increases in temperature

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Meteorological Factors, Precipitation, Temperature

Climate Change and Human Health Literature Portal

Temperature: Fluctuations

Geographic Feature: ☒

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☒

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: Other Asian Country

Other Asian Country: Bangladesh

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Dengue

Mitigation/Adaptation: ☒

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☒

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Resource Type: ☒

format or standard characteristic of resource

Research Article

Timescale: ☒

time period studied

Long-Term (>50 years)

Vulnerability/Impact Assessment: ☒

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content